PRESENTATION MATERIALS

CORM '99

May 3rd through May 6th, 1999

The Gaithersburg Hilton Hotel

Gaithersburg, Maryland USA

SESSION IV

Optical Metrology of Displays

CORM

COUNCIL FOR OPTICAL RADIATION MEASUREMENT

This section contains presentation materials supplied by the authors for **Session IV** of CORM 99, **Optical Metrology of Displays**. The materials are included in the order of presentation as listed below. Materials for some presentations were not available at the time of the printing of this booklet. Presenter contact information is supplied for those presentations for which materials are not provided

Current Video Display Calibration/Characterization Research Activities at NRC
Rejean Baribeau NRC

Evaluation of Light Measuring Devices for Flying-Spot Display Measurements
Paul A Boynton NIST

SAE Aerospace Recommended Practice ARP-4260
Mike Klein Photo Research

Polystyrene Box Uniform Light Sources
Edward F. Kelley NIST

Production Trial of the NIST Four-Color Correction Method for Avionics LCD's
Geoffrey Torrington et al Honeywell

Colorimeter Batch Filter Variations and Their Effect on Display Color Accuracy
Richard Austin Gamma Scientific

Polystyrene Box Uniform Light Sources

— a continuation of the story of —

Roughneck Metrology

CORM'99

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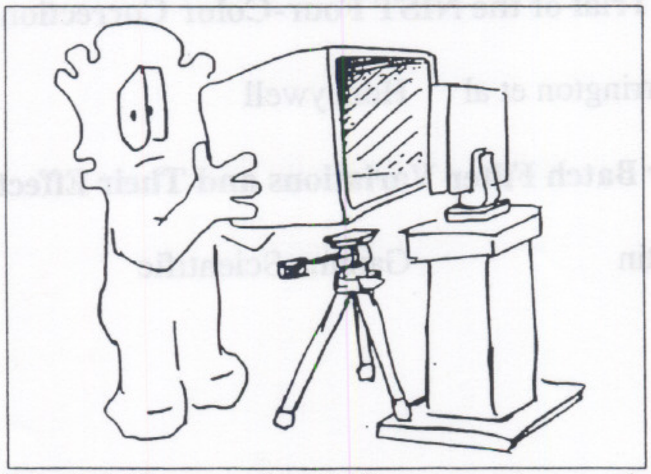
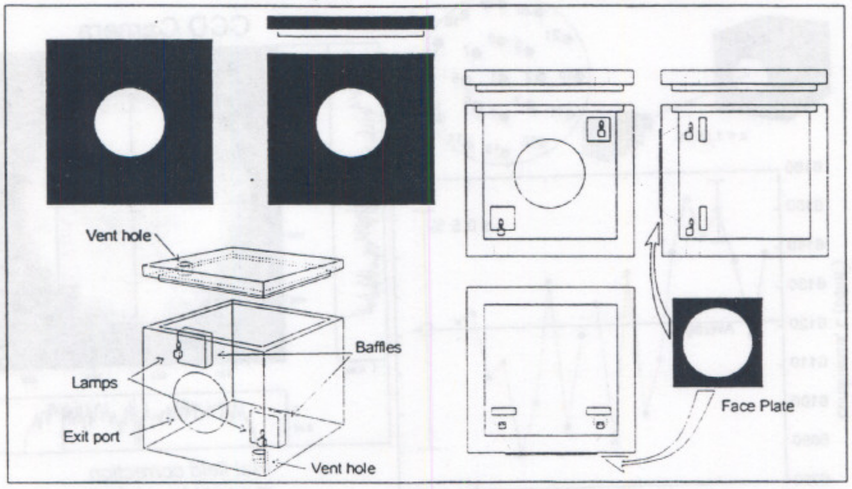
ROUGHNECK METROLOGY



You might be a roughneck if you use a beer cooler as an integrating sphere (or light source).

POLYSTYRENE BOX UNIFORM LIGHT SOURCE

318x318x305 mm interior (12.5" x 12.5" x12" high)
394x394x382 mm exterior (15.5"x15.5"x15" high)
150 mm exit port



< $50
+ $600 for inexpensive power supply

POLYSTYRENE BOX UNIFORM LIGHT SOURCE

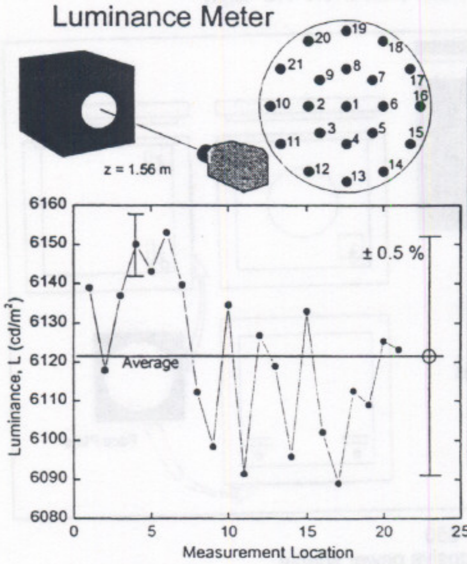
PROS

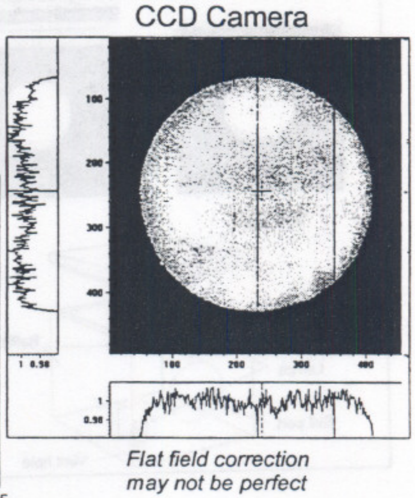
- Light weight
- Inexpensive, easy to replace
- Components available from hardware store & packing company (except power supply)
- Rugged (can drop kick across lab)
- Interior easily repaired using curved knife blade

CONS

- Reproducibility is not good due to geometry changes
- Easy to poke holes in outside surface
- Longevity uncertain
- Not good for wide angle use as a Lambertian source
- People will think you're a roughneck

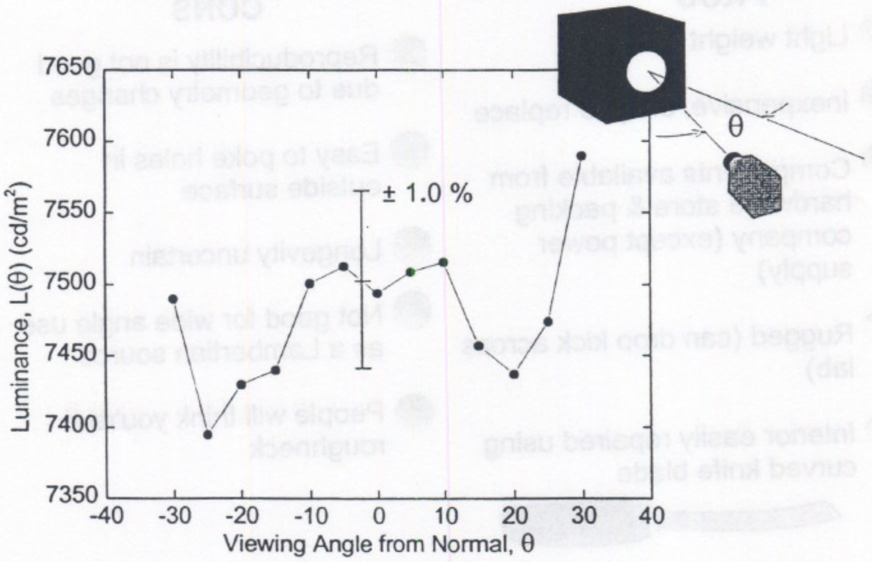
POLYSTYRENE BOX UNIFORM LIGHT SOURCE
UNIFORMITY MEASUREMENT





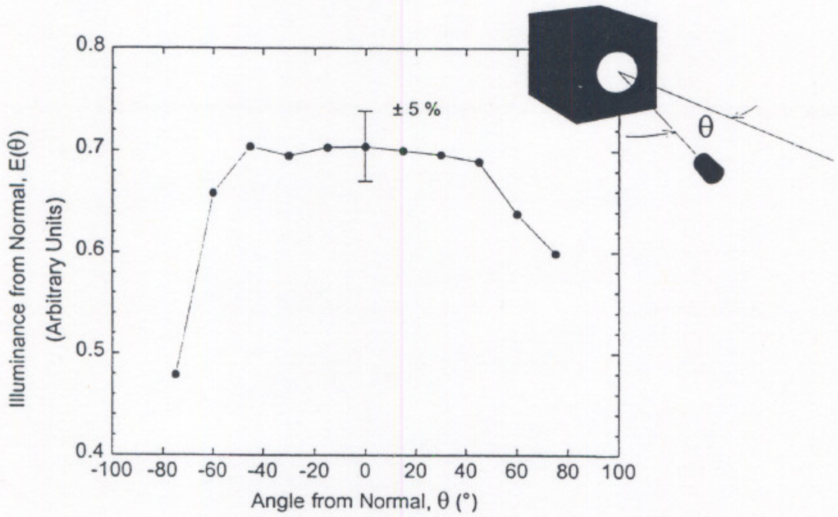
Flat field correction may not be perfect

POLYSTYRENE BOX UNIFORM LIGHT SOURCE
VIEWING ANGLE LUMINANCE AT CENTER



POLYSTYRENE BOX UNIFORM LIGHT SOURCE

ILLUMINANCE FROM EXIT PORT VS. ANGLE



POLYSTYRENE BOX UNIFORM LIGHT SOURCE

POLYSTYRENE REFLECTANCE PROPERTIES